6022 Protocol - White paper

Restoring trust in the Insurance industry

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1 - Motivation

In the insurance sector, trust is fundamental. Policyholders must have confidence that insurance companies will fulfill their obligations when claims arise, while insurers need assurance that policyholders will pay premiums and submit legitimate claims. However, this essential trust has deteriorated within certain insurance segments. The dynamic between insurers and policyholders has, unfortunately, evolved into a contentious one, marked by insurers incorporating restrictive clauses in contracts to put under control claims payouts and policyholders, in response, resorting to exaggerated or inflated claims to offset premium costs. This has contributed to a growing prevalence of insurance fraud.

The 6022 Protocol does not replace existing insurance contracts or the relationships between insurers and policyholders. Rather, it aims to establish a supplementary layer of trust that operates alongside traditional insurance agreements. By introducing a lightweight technological solution allowing collateral deposit, the 6022 Protocol enhances existing relationships and facilitates the exploration of innovative insurance concepts without disrupting the existing contractual architecture.

1.1 Why Collateral Can Change Policyholder Behavior?

The 6022 protocol leverages the deposit of collateral to enhance the relationship between the insurer and the policyholder. This approach aims to discourage abuses and incentivize responsible policyholder behavior while increasing transparency into the insurer's practices through the use of a public blockchain.

The following key psychological principles explain how collateral influences policyholder behavior:

Passing the Marshmallow Test: By choosing to lock collateral in a 6022 protocol smart contract in exchange for deferred benefits, policyholders demonstrate a preference for delayed gratification, a trait strongly associated with lower risk profiles. This behavior reflects the principles of the Marshmallow Test, a psychological experiment where participants choose between an immediate reward or a larger reward after waiting. The ability to delay gratification, as shown in the test, is linked to positive life outcomes such as academic success or financial stability.. By committing to the protocol, policyholders exhibit this low-risk profile characteristic, thereby enabling insurers to more effectively identify individuals with lower risk tendencies at an early stage.

Experiencing the Endowment Effect: The act of locking their own funds as collateral on the blockchain triggers the endowment effect in policyholders. This cognitive bias leads individuals to place a higher value on assets they own compared to those they don't. Consequently, the perceived value of the collateral, from the policyholder's perspective, increases beyond its purely monetary worth.

Enhancing Loss Aversion: Collateral on a blockchain strengthens policyholders' sense of loss aversion. With blockchain transparency, policyholders can view their collateral directly in their digital wallet, maintaining a strong psychological connection to their assets and reinforcing their sense of ownership. Loss aversion, a principle from behavioral economics, posits that the pain of losing something is more impactful than the pleasure of gaining something of equal value.
A relatable example is the use of shopping cart tokens in supermarkets: customers are more likely to return their carts to designated areas to retrieve their token or coin, even though it holds minimal monetary value. This behavior is driven by the desire to avoid even a small loss. Similarly, the potential risk of losing their collateral encourages policyholders to adopt safer and more responsible behaviors, aligning their actions with the principles of loss aversion.

By incorporating these psychological effects, the 6022 protocol allows insurers to select upfront the best profiles (positive selection) and effectively incentivizes policyholders to adopt less accident-prone behavior, thus reducing risks for both insurers and policyholders, and creating a more transparent and trust-based relationship.

1.2 Why the Protocol Can Change Insurer Behavior?

The 6022 protocol can also transform the behavior of insurers by promoting transparency. The transparency offered by the blockchain allows policyholders to see the insurer's collateral restitution rate (Note: The rules for reclaiming collateral are to be defined and clearly communicated by the insurer. For example, this may apply in cases such as fraudulent claims). This visibility ensures that insurers are held accountable for their actions and decisions. As policyholders can track how often insurers return the collateral, insurers are motivated to act fairly and transparently to maintain a positive reputation.

Additionally, the protocol is likely to reduce the number of claims filed. With the collateral acting as a security deposit, policyholders may be less inclined to file fraudulent claims, knowing they could lose their collateral. This reduction in claims can lower the overall cost for insurers, enabling them to offer lower premiums to their customers.

The presence of collateral reduces suspicion surrounding policyholders' claims. When policyholders have a financial stake in their collateral, the likelihood of fraudulent claims decreases significantly. This allows insurers to concentrate on legitimate claims, enhancing operational efficiency while fostering stronger, more trusting relationships with their clients.

2 - General description of the 6022 Protocol

The operation of the protocol is based on the principle of a smart contract established between the insurer and the policyholder alongside an insurance contract. The protocol allows the insurer to request the policyholder to deposit a certain amount in cryptocurrency into a smart contract. The protocol enables the insurer to set up the contract by specifying the exact amount of collateral, the required cryptocurrency for the collateral, and the lock-in period.

2.1 Roles & definitions

The **insurer** is identified by its wallet address. Before initiating any activity, the insurer must create a 'reward pool' that will collect the payment of protocol fees for redistribution to policyholders according to the protocol rules. Once the pool is created, the insurer can initiate 6022 smart contracts by specifying the cryptocurrency used, the expected amount, the lock-in period, and declaring the equivalent value of the expected collateral amount in 6022 Tokens (protocol tokens).

The **policyholder** is identified by his wallet address. He holds one of the three NFT keys generated by the protocol at the time of the smart contract initialization. This NFT key is provided to him by the insurer and allows him to deposit his collateral into the protocol and retrieve his collateral at the end of the lock-in period. Without this NFT key, the collateral deposit is impossible.

For the sake of simplicity, we define an insurer and a policyholder profile to describe the operation on the 6022 Protocol. Nevertheless, the protocol does not assign any particular or specific roles to users. Thus, each user identified by their wallet address can simultaneously act as both an 'insurer' and a 'policyholder'.

The 6022 smart contract established between the insurer and the policyholder functions as a kind of **safe** associated with 3 identical NFT keys, allowing for the deposit, confiscation, or withdrawal of collateral by users. Each smart contract is associated with a lock-in period, starting from the contract creation date and ending at the date defined by the insurer when the contract was created. Before the end of the lock-in period, 2 keys are required to open the safe. After the lock-in period, a single key is sufficient.

The NFT Key: When a 6022 smart contract is created, the protocol generates 3 keys in the form of NFTs. These 3 keys are distributed to the insurer, who must send one to the policyholder so that he can deposit the collateral.

The collateral is the amount deposited by the policyholder using their NFT key previously provided by the insurer. The exact amount and the cryptocurrency used are defined by the insurer at the time of the contract's creation.

The lock-in period corresponds to the time during which withdrawing the collateral requires simultaneously holding 2 NFT keys. After this period, a single key is sufficient. Opening the safe during the lock-in period results in the confiscation of the accumulated rewards (see definition below), which are immediately redistributed to all other policyholders in the reward pool (see definition below).

The reward pool is created by the insurer. Each insurer can associate one and only one reward pool with a given wallet.
The pool is funded by the fees paid in 6022 tokens by the insurer at the time of creation of each 6022 contract.
After the creation of a new 6022 contract, the pool allows for the immediate redistribution of the collected amounts of 6022 tokens to policyholders with existing contracts associated with this pool.

In case of collateral confiscation during the lock-in period by the insurer (holding two keys), the 6022 tokens accumulated by the policyholder are confiscated and transferred to the reward pool to which it is related for redistribution among the other policyholders.

Rewards are benefits distributed to policyholders in the form of 6022 tokens from the reward pools associated with each insurer's wallet. Policyholders can only receive rewards if they have active 6022 contracts during the lock-in period, with collateral that has been deposited and remains unconfiscated.

Fees are an amount in 6022 tokens required for the insurer to use the 6022 protocol, i.e., for the creation of each 6022 contract. The amount of fees, in 6022 tokens, is arbitrarily set at 2% of the value[1] of the collateral requested by the insurer for each 6022 contract.

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[1] The value of the collateral is purely declarative and indicated by the insurer at the time of contract creation. This value is expressed in 6022 tokens and requires the insurer to have the exchange rate of the 6022 token at the time of contract creation. The value of the collateral in 6022 tokens is fixed for each smart contract at the type of inception of such contract and cannot be updated or modified during the life of the contract

3 Use case

Step 1: Initialization of a 6022 Smart Contract by the Insurer

The insurer initiates the contract with the policyholder by creating a 6022 smart contract with these parameters:
- collateral cryptocurrency,
- expected amount,
- declarative value of the collateral in 6022 tokens,
- lock-in end date.

The insurer pays the fees to the protocol corresponding to 2% of the declared collateral amount in 6022 tokens and receives 3 NFT keys.

The insurer transfers one NFT key to the policyholder (this operation does not require the use of the 6022 protocol).

Step 2: Collateral Deposit by the Policyholder

The policyholder receives his NFT key and the insurer's instructions to deposit his collateral. He deposits the exact requested amount in the specified crypto-currency. His collateral is now locked by the protocol until the end of the lock-in period.

Step 3: Rewards distribution via the Reward Pool during lock-in period

Thanks to the reward pool, the policyholder receives rewards in 6022 tokens based on the insurer's activity (new 6022 contracts created, 6022 rewards confiscated on other contracts). These reward tokens are capitalized on his 6022 contract in addition to his collateral. At the end of the lock-in period, the policyholder can freely dispose of these rewards. During the lock-in period, his rewards are locked along with the collateral.

Step 4_1 : Case where the Insurer decides to seize the Collateral

If the insurer uses their two NFT keys to seize the collateral, the insurer recovers the entirety of the collateral. The accumulated rewards are transferred to the reward pool and immediately redistributed to policyholders with an active 6022 contract (i.e., before the end of the lock-in period with deposited collateral).

Step 4_2 : Case where the collateral has not been seized before the end of the lock-in period

If the collateral has not been seized before the end of the lock-in period, the policyholder can use one key to retrieve the intact collateral and the accumulated 6022 token rewards.

4. Token 6022

The 6022 Token (T6022[2]) is the native token for the 6022 protocol. It is a utility token that allows insurers and policyholders to access the 6022 protocol. It enables the business case.

4.1 Utilities of T6022

T6022 has the following utilities:

- Access: To use the protocol, insurers must provide 6022 tokens.
- Benefits: Users whose collateral has not been confiscated by the insurer will receive rewards in the form of 6022 tokens that have been collected throughout the collateral lock-in period.

Note that the insurer determines the amount and type (token or NFT) of collateral to be provided when a 6022 contract is initialized.

4.2 Supply and allocation of T6022

Maximum supply

T6022's maximum total supply is capped at 1 billion tokens.

Allocation and distribution

The key elements of the T6022 token allocation and distribution include the following:

- All tokens are generated at the token generation event.
- All tokens are allocated to a liquidity pool and the access to the liquidity pool is burned.

5. Fee redistribution

Policyholders with eligible collateral (see section 5.2 eligibility criteria) receive and accumulate, throughout the lock-in period, T6022 tokens that have been collected from fees paid to the protocol (we use the term "fee redistribution" in the remainder of this document).

Below, we describe how fees are collected from a specific insurance pool (see section 5.1 fee collection), and how this amount is redistributed among the pool's

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[2] In the document, for simplicity, the 6022 token will be referred to as T6022.

eligible policyholders (see section 5.2 fee redistribution to policyholders).

5.1 Fee collection (at insurance pool level)

The fees collected by the protocol at a given time depend on several parameters, as described below:

- **Fees T**: The amount of fees redistributed to policyholders in T6022 for a particular insurance pool is determined by the fees paid in T6022 by the insurance company when a 6022 contract is initialized:
    - The fees are based on the amount of collateral declared by the insurer at the time of contract initialization and are expressed as a percentage thereof.[3] - The fee in T6022 is set at 2% (of the collateral value): this reflects the opportunity cost for policyholders who expect a minimum return on their collateral.
    - Fees are paid in T6022 tokens, and the exact exchange rate is set by the insurer when the contract is initialized.[4]

- **Confiscated collateral**: The amount of fees redistributed also depends on the amount of collateral confiscated before the end of the lock-in period. In this case, the fees accumulated by a depositor whose collateral is confiscated before the end of the lock-in period are added to the fee pool of the insurance company that confiscated the collateral and are immediately redistributed to the other eligible policyholders in the proportion described under article 5.2 below.

- **Number of eligible contracts:** Ultimately, the amount of fees redistributed depends on the number of initiated and eligible contracts at any given time.

The total amount of fees collected during a transaction (deposit fees when initiating a contract, or the collection of fees attached to confiscated collateral) at time *t*, in the insurance pool a is represented by

$$rt_{a,t}$$

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[3] When the first contract of an insurance pool is initialized, we consider that the fees are redistributed to himself. So the 2% fees are considered as a fraction of the collateral. 2 The insurer indicates the equivalent of the collateral amount in T6022; this amount is purely declarative except for the first contract (see 5.3)

[4] Depending on the value declared when the smart contract is created by the insurer, this value is immutable.

5.2 Redistribution of fees to policyholders

This section describes the mechanism for fee redistributing to eligible policyholders in the 6022 Protocol. A key aspect of the mechanism is its emphasis on fairness and proportionality, ensuring that fees are redistributed based on the value of each policyholder's collateral.[4]

Eligibility criteria

To be eligible for redistributed fees, a policyholder must meet the following criteria:

- Pre-existing collateral: only policyholders with collateral that existed prior to a fee redistribution at time t are eligible for that redistribution.
- Collateral value: the collateral value must be greater than 0.

We define the time at which a policyholder becomes eligible for redistribution by the letter d. Thus, a policyholder is eligible for redistribution only if d is earlier than t ($t > d$).

Fee redistribution period

All fees at time t are immediately redistributed to all users of an insurance pool with eligible collateral. Distributed fees received at time t are added to fees already distributed to a policyholder.

Note that a policyholder cannot withdraw accumulated fees before the end of his or her lock-in period[5]; accumulated fees are withdrawn at the same time as the collateral using an NFT key that the policyholder receives when the contract is initialized[6].

Required parameters to calculate individual redistribution fees

The amount of redistributed fees collected by policyholder i depends on:

1. The total amount of fees collected $r_{a,t}$ at time t (see section 5.1 fee collection).

2. The amount of collateral valued in T6022 by the insurer a when initiating a contract with the policyholder i: $f_{i,a}$. This amount is determined and fixed at contract initiation.

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[5] The definition of the lock-in period is set by the insurer when the contract is initialized.
[6] The insurer receives two NFT keys when the contract is initialized, enabling him to recover the collateral before or after the end of the lock-in period.

3. The sum of all collateral valued in T6022 of all eligible policyholders (see section 5.1 eligibility criteria) in an insurance pool a at time t: $tf_{a,t} = \sum_{i=1}^{v} f_{i,a,t}$ where v is the number of eligible policyholders in an insurance pool.

Mechanism for redistributing fees to policyholders

Each policyholder i with eligible collateral receives a share of the total fees collected

$$rt_{a,t}$$

in an insurance pool at time t. The amount of redistributed fees collected by each eligible policyholder i is proportional to its share of the total collateral of an insurance pool[7], represented by:

$$ri_{i,a,t} = rt_{a,t} \times \frac{f_{i,a}}{tf_{a,t}}, \text{ with } t>d$$

where $ri_{i,a,t}$ are the redistributed fees collected by individual i at time t in the insurance pool a and with d as the the time at which individual i becomes eligible to receive redistributed fees. Note that policyholders collect fees as long as they are eligible. That is, from the time immediately after the policyholder provides the collateral and pays the fees until the collateral is withdrawn or until the end of the lock-in period.

This simple mechanism ensures that the fees received by each policyholder are directly proportional to their contribution to the total eligible collateral. This means that a policyholder who has provided a large amount of collateral during his lock-in period (and therefore refrains from investing the same amount elsewhere) will receive more fees than another policyholder with a small amount of collateral.

Example of fee redistribution

For example, suppose there are three policyholders with a collateral of 100, 200, and 300 (i.e., in total 600), and that the total fees collected at time t are 60 T6022.

The fees will then be redistributed as follows

- Redistribution of fees to policyholder 1: 60 × 100/600 = 10 T6022
- Redistribution of fees to policyholder 2 : 60 × 200/600 = 20 T6022
- Redistribution of fees to policyholder 3 : 60 × 300/600 = 30 T6022

This fee redistribution mechanism is designed to ensure a fair and proportional redistribution of fees, encouraging participants to contribute to the system's collateral pool. By aligning fee redistributions with collateral, the protocol aims to maintain a healthy and robust economic ecosystem.

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[7] Depending on the value declared when the smart contract is created by the insurer, this value is immutable.

Specific Case of the First Contract

As outlined in section 5.1, the first contract operates under unique conditions and adheres to the following principles:

- Incorporated fees : For the first contract 2% fees are considered as a part of the collateral deposit (because no pre-existing contracts exist to redistribute rewards from the reward pool).
- Collateral management by the insurer: The insurer deposits its own collateral in the first contract and is the sole party authorized to withdraw it under specific conditions. Consequently, no NFT keys are issued for this contract; the insurer uses only its private key to manage collateral.
- Mandatory use of T6022 tokens: Collateral must exclusively be deposited in T6022 tokens, and the deposited amount must precisely match the declared value.
- Indefinite lock-in period: The collateral remains locked until all eligible contracts in the reward pool have exceeded their lock-in periods or if the insurer retrieves the collateral from policyholders before their lock-in period ends. Thus, no predefined lock-in duration applies.
- Condition for new contract creation: The insurer cannot create new contracts unless collateral remains in the first contract. This requirement links all subsequent contracts to the existence of the first.
- Benefit from operational dust: The first contract accrues all operational dust (minor leftover tokens) from token redistribution operations.

Furthermore, to maintain consistency across the protocol, policyholders cannot deposit collateral into a pre-existing contract if the first contract lacks collateral.

This design ensures:

Avoidance of protocol token blockage: The insurer retains the ability to recover rewards from the final contract if its collateral is seized, ensuring that neither T6022 tokens nor operational dust remain trapped in the protocol.

Every rewards pool initiation will include a first contract created and owned by the insurer, serving as the foundational element for subsequent protocol operations.

5.3 Illustration of the T6022 fee collection and redistribution mechanism

The following illustration summarizes how fees are collected and redistributed to eligible policyholders.

Image 1 - Flow diagram
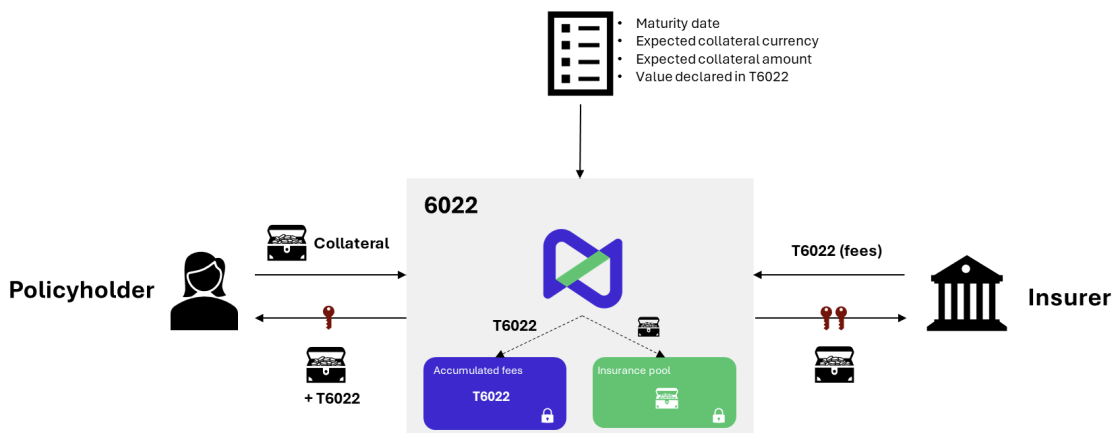
The collateral is secured by a lock (🔒) and one or two keys are required to retrieve it. After the end of the lock-in period only one key (🔑) is required. In this case, the policyholder who has recovered the collateral will also receive the accumulated fees. To open the vault and retrieve the collateral before the end of the lock-in period two keys (🔑🔑) are required. In this case, the insurer (the only one with two keys) recovers the collateral. In addition, when the vault is opened with two keys, the accumulated fees associated with the collateral are not redistributed to its policyholder, but to all (other) eligible policyholders in the insurance pool.

6 Conclusion

The 6022 Protocol marks a significant leap forward in the insurance industry by leveraging blockchain technology to enhance trust, transparency, and efficiency. By requiring policyholders to deposit collateral, the protocol encourages responsible behavior, reducing the likelihood of fraudulent claims and reckless actions. This innovative approach draws on behavioral principles like the Marshmallow Test, the Endowment Effect, and Loss Aversion, fostering more conscientious decision-making among policyholders.

For insurers, the 6022 Protocol offers a transformative way to rebuild trust with their clients. Blockchain transparency enables policyholders to track collateral restitution rates, holding insurers accountable for their actions and ensuring fair practices. This transparency, combined with policyholders' financial stake in their collateral, reduces suspicion and discourages fraud, ultimately lowering operational costs and allowing insurers to provide more competitive premiums or additional coverages.

The protocol's tokenomics, centered on T6022 tokens for collateral and fee payments, establish a sustainable and incentivized ecosystem. By redistributing fees and rewards, the protocol ensures that policyholders who adhere to its rules are fairly compensated, aligning the interests of both insurers and policyholders throughout the duration of the insurance contract.

As an accessible entry point for integrating blockchain technology into the insurance industry, the 6022 Protocol provides insurers with a seamless solution that preserves existing insurance contractual structures. It introduces a lightweight technological layer, making adoption straightforward for traditional insurance models. Moreover, it appeals to a new generation of digitally- and crypto-savvy customers who value transparency, decentralized finance (DeFi), and digital trust, positioning insurers to meet the evolving expectations of the modern client.

Document signé électroniquement

2025-01-27

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STATUS	🟢 Signed
STATUS TIMESTAMP	2025/01/27 12:12:15 UTC

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